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The Measurement of Business Ownership by Gender in the Canadian Employer-Employee Dynamics Database

by Douwere Grekou, Jiang Li and Huju Liu

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Papers in this series provide background discussions of the methods used to develop data for economic, health, and social analytical studies at Statistics Canada. They are intended to provide readers with information on the statistical methods, standards and definitions used to develop databases for research purposes. All papers in this series have undergone peer and institutional review to ensure that they conform to Statistics Canada's mandate and adhere to generally accepted standards of good professional practice.

The papers can be downloaded free at www.statcan.gc.ca.

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Abstract

Understanding women's business ownership and the performance of women-owned enterprises is important for designing policies to promote gender equality in leadership, economic empowerment of women and inclusive growth. However, evidence on business ownership by gender remains scarce because of the lack of comprehensive data. The study, *Women-owned Enterprises in Canada* (Grekou, Li and Liu, 2018), fills the data gap by identifying business ownership by gender using a newly developed administrative dataset—the Canadian Employer–Employee Dynamics Database (CEEDD). The dataset contains business owner information for all unincorporated enterprises and private corporations in Canada. This paper discusses the methodology adopted to establish the gender structure of business ownership. It then presents estimates of business ownership by gender (men or women majority ownership and equal ownership). Finally, it analyzes the sensitivity of these estimates and compares them with those calculated using other data sources.

1 Introduction

Business ownership or entrepreneurship has long been argued to be an important driver for innovation, job creation and productivity growth. New businesses bring new ideas and products, create new jobs and increase competition. They also drive out less productive businesses in the market and thereby increase overall productivity. Entrepreneurs are regarded as risk takers, innovators, and coordinators of factors of production. They are an underlying force of "creative destruction" (Knight 1921; Schumpeter 1942).

However, a considerable gender difference exists in business ownership: men dominate business ownership. According to the Survey on Financing and Growth of Small and Medium Enterprises (SFGSME), the proportion of women-owned small and medium enterprises (SMEs) was lower than that of men-owned (15.7% versus 64.6%) in 2014. Many studies also find that women-owned enterprises lag men-owned enterprises in business performance such as sales, profits and employment (Fairlie and Robb 2009; Coleman and Robb 2012; Industry Canada 2015; Rosa and Sylla 2016).

Promoting women's business ownership and improving the performance of women-owned firms not only fosters innovation and competitiveness, but it also fosters gender equality in leadership and the economic empowerment of women. Such interventions are a central component of the Gender Initiative for stronger, better and fairer growth of the Organisation for Economic Co-operation and Development's (OECD) (Adema et al. 2014).

The lack of comprehensive data on women's business ownership presents challenges in the development of policies to promote gender diversity in business ownership. In Canada, until now, the Labour Force Survey (LFS) has been the primary source of information for identifying the self-employed by gender for both unincorporated and incorporated businesses. However, it provides little information on these businesses. The SFGSME is the only source that provides information on both business owners and businesses, with a focus on SMEs in certain industries.[1] The small number of firms surveyed prevents comprehensive studies of women-owned business at a more detailed level, such as by province or territory, industry and size simultaneously.[2] Furthermore, neither the LFS nor the SFGSME is longitudinal in design. This makes tracking gender changes in ownership over time difficult.

This paper serves as a technical guide and reference for the study *Women-owned Enterprises in Canada* (Grekou, Li and Liu, 2018). The work underpinning this study fills these gaps by identifying business ownership by gender, using a large-scale linked administrative dataset—the Canadian Employer–Employee Dynamics Database (CEEDD). The CEEDD is a matched database between workers and firms, covering all individual and corporate tax filers since 2001. The Business Owner Module—derived from the CEEDD—covers business owners of all private corporations and unincorporated businesses in Canada.[3] These business owners are linked to individual tax files (T1) for their demographic information (i.e., age, gender, immigrant status) and to business tax records for their business characteristics. Both workers and firms can also be tracked over time in the CEEDD. The large number of observations, the multifaceted information and the longitudinal nature of the CEEDD enable comprehensive studies on women's business ownership and the performance of women-owned enterprises.

1. The SFGSME defines SMEs as firms with less than 500 employees. It excludes the industries in the following North American Industry Classification System (NAICS) classifications: 22, 52, 55, 61, 91, 5321, 5324, 6214, 6215, 6219, 6221, 6222, 6223 and 6242.
2. For example, the surveyed firms totalled slightly over 10,000 in 2014.
3. Wolfson et al. (2016) also developed a dataset containing business owners of Canadian-controlled private corporations (CCPCs). However, their dataset is only a 20% sample and includes owners of CCPCs but not unincorporated businesses.

The rest of the paper is organized as follows. Section 2 describes the CEEDD and its Business Owner Module. Section 3 details the methodology adopted in the paper to identify business ownership by gender using the CEEDD. Section 4 presents main estimates of business ownership by gender and sensitivity analysis. Section 5 concludes the analysis.

2 The Canadian Employer–Employee Dynamics Database and its Business Owner Module

This section first describes the CEEDD and its Business Owner Module. It then assesses the scope of the Business Owner Module by comparing it with the National Accounts Longitudinal Microdata File (NALMF).

2.1 The Canadian Employer–Employee Dynamics Database and its Business Owner Module

The CEEDD is a matched database between Canadian firms and workers. It links several administrative tax files including:

- individual tax files (T1 General – Income Tax and Benefit Return)
- unincorporated business owner files (T1 Financial Declaration, or T1FD)
- individual employment remuneration files (T4, Statement of Remuneration Paid)
- Longitudinal Immigration Database (IMDB)
- Corporation Income Tax Return (T2)
- unincorporated business tax files (T1 Business Declaration, or T1BD).

At the present time, the CEEDD covers the universe of individual and corporate tax filers in Canada, from 2001 to 2013. Three main modules can be developed using the CEEDD: the Paid Employee Module, the Business Module and the Business Owner Module. The Paid Employee Module consists of the demographics of paid workers and the characteristics of the businesses where they work.[4] The Business Module consists of information on each business, including information on the composition of the business's workforce.[5]

The Business Owner Module consists of information on all business owners—incorporated and unincorporated—and their owned businesses. Corporate business owners are defined as shareholders of private corporations. In Canada, all private corporations (non-publicly traded)—Canadian-controlled or other—are required to file a Schedule 50 (Shareholder Information) as part of their Corporation Income Tax Return (T2).[6,7] Three sets of information are available from this schedule: type of shareholders (i.e., company, individual and income trust), type of share (i.e., common or preferred) and percentage of shares owned by shareholder.[8] Individual shareholders are then linked to individual tax

4. The demographic information of paid workers includes age, gender, marital status, immigrant status, province or territory of residence and earnings from each job. Business characteristics include industry, number of employees, payroll, revenues, profits, productivity, research and development, and trade.
5. It includes information on the age and wage distribution of workers, and the percentage of immigrants and females.
6. Schedule 50 reports any shareholders with at least 10% of shares.
7. Other private corporations must meet all of the following requirements: a resident in Canada; not a public corporation; not controlled by one or more public corporations; and not controlled by one or more federal Crown corporations (Canada Revenue Agency 2016). As such, this type of private corporations may be owned by non-residents.
8. Individual owners make up the majority of all reported shareholders. Note that although required, however, not all private corporations file a Schedule 50. Moreover, among those filed, some corporations provided missing or invalid individual or business identifiers (BIs). These records are excluded from the Business Owner Module. See Green et al. (2016) and Wolfson et al. (2016) for more discussions.

files (T1) for their demographic information and to corporate tax files (T2) for information on their owned businesses.

Unincorporated business owners are identified from T1FDs. T1FDs are a collection of all financial declarations filed by individuals who report any sort of self-employment income including business, professional, commission, farming, fishing and rental income. A financial declaration consists of an individual's name, contact information, social insurance number (SIN), business number (BN), business name and address, industry classification and other business-related financial variables. The financial declarations file is supplemented by the Statement of Partnership Income (Form T5013) to identify limited partnerships and partnerships. All financial declaration records are then aggregated up to the business level to form the T1BD. Therefore, the T1BD contains one record for each unincorporated business for the current reference year.

The linkage between T1FD and individual tax files (T1) through SINs thus provides demographic information for unincorporated owners, while the linkage between T1FD and T1BD files through a unique business identifier (BI) provides business-related information.

Administrative records on incorporated business owners and their businesses are available from 2001, whereas tax records on unincorporated businesses are available only from 2005. As such, the Business Owner Module is available for 2005 onward for both unincorporated and incorporated businesses. Moreover, the businesses included in the Module resemble SMEs because publicly traded corporations do not file a Schedule 50.

In summary, the CEEDD Business Owner Module (CEEDD-BOM) offers several advantages over other data sources such as the SFGSME and LFS. Unlike the SFGSME, the Module enables longitudinal analysis on business and business ownership; both business owners and their businesses are followed through time with consistent identifiers established in administrative records. In addition to demographic information on business owners—similar to what the LFS offers—the Module consists of information on their owned businesses such as sales, revenue and employment. Moreover, it includes all unincorporated self-employed individuals who report any sort of self-employment income, as well as shareholders of privately controlled corporations. The significantly expanded coverage of businesses provides a more complete picture of business ownership in various dimensions such as province or territory, industry and firm size.

2.2 A comparison with the National Accounts Longitudinal Microdata File

To assess the scope of businesses covered by the CEEDD-BOM, this subsection compares the Module with the NALMF.[9] The NALMF is an administrative databank created by joining several Canada Revenue Agency (CRA) tax data files:

- Corporation Income Tax Return (T2)
- Payroll Account Deductions (PD7A)
- Statement of Remuneration Paid (T4)
- Goods and services tax/harmonized sales tax (GST/HST).

The target population of the NALMF consists of all enterprises that file a T2, PD7A, or T4. Hence, the NALMF covers both privately owned and publicly traded corporations, and unincorporated enterprises with employees. Unincorporated enterprises with no employees are excluded from NALMF. In contrast, the target population of the CEEDD-BOM consists of all privately owned corporations and unincorporated businesses.

9. Rollin (2014) describes in more detail the sources and the methodology used to create NALMF, and the challenges faced.

With respect to number of enterprises with employment, the NALMF is more comprehensive than the CEEDD-BOM. The NALMF essentially covers all employment in the business sector, as it includes publicly traded corporations with employees, privately owned corporations with employees, and unincorporated enterprises with employees. On the other hand, the CEEDD-BOM includes only the latter two types of employers. The comparison of the NALMF and the CEEDD-BOM below basically gives the percentage of business sector employment covered by the CEEDD-BOM.

With respect to the number of enterprises, neither file is more comprehensive. The NALMF excludes unincorporated enterprises with no employees (essentially self-employed workers[10]), but it includes publicly traded corporations. The CEEDD-BOM includes the former, but excludes the latter. Given the number of unincorporated enterprises without employees is larger than the number of publicly traded corporations, the number of enterprises in the CEEDD-BOM is larger than that in the NALMF.

Table 1-1 summarizes the comparison between the two sources for number of enterprises, number of enterprises with employment and the associated employment. From 2005 to 2013, the NALMF included on average over 2.3 million enterprises (Column 1).[11] About one-half of them (1.2 million) are employer enterprises (Column 2). These employer enterprises employ roughly 16.0 million workers each year (Column 3).[12] Each enterprise hires on average approximately 14 workers (Column 4). In comparison, the CEEDD-BOM covers over 5.1 million enterprises. About one-sixth of them, or 858,000 enterprises, employ 7.8 million workers each year on average (Columns 5 to 7). The fraction of enterprises with employment is much smaller in the CEEDD-BOM than in the NALMF. This occurs, as explained earlier, because the former also includes unincorporated businesses that do not hire any employees (mostly self-employed individuals).

Table 1-2 focuses on enterprises from the CEEDD-BOM that can also be found in the NALMF. The CEEDD-BOM–NALMF linkage includes 1.7 million enterprises overall and 858,000 enterprises with employment each year (Columns 8 and 9). They account for 71.8% of all enterprises and 74.2% of enterprises with employment in the NALMF (Columns 12 and 13). These enterprises hire 7.8 million employees, accounting for nearly one-half of the employment in the NALMF business sector (Columns 10 and 14). The average size of enterprise—measured by number of workers per enterprise—is 9 workers in the CEEDD-BOM–NALMF linkage (Column 11), which is smaller than the 14 workers in the NALMF.

In summary, the CEEDD-BOM covers a significant portion on the number of employer enterprises and the number of employees in the business sector. Ownership information is available for roughly 74% of employer enterprises, and these employer enterprises account for approximately 49% of employment. The employer enterprises for which ownership information is not available in the CEEDD-BOM are the publicly traded corporations.[13]

10. Studies have shown that unincorporated self-employed activities differ from corporations in many aspects including owners' background, the start-up motivation, and business dynamics. See for example, Levine and Rubinstein (2017), Light and Munk (2015), and Grekou and Liu (2018).
11. The NALMF excludes the public administration industry (NAICS 91).
12. The number of employees is a headcount of the individuals who received a Statement of Remuneration Paid (T4) during a year; that is, employment can be either part-time or full-time, permanent or temporary.
13. The ownership information is not available either in the CEEDD-BOM for those privately owned corporations that did not file a Schedule 50 or filed with missing information.

Table 1-1
Number of enterprises and employment in the CEEDD-BOM and the NALMF business sector, 2005 to 2013

	NALMF				CEEDD-BOM		
	Number of enterprises	Number of enterprises with employment	Total employment	Average number of employees per enterprise with employment	Number of enterprises	Number of enterprises with employment	Total employment
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
				number			
2005	2,104,500	1,070,300	15,411,100	14.4	4,732,900	776,200	7,486,300
2006	2,174,100	1,096,100	15,768,100	14.4	4,825,000	804,700	7,760,000
2007	2,249,500	1,129,900	16,077,000	14.2	4,934,500	833,500	7,848,000
2008	2,321,100	1,150,900	16,225,700	14.1	5,075,300	857,000	7,933,700
2009	2,356,700	1,159,100	15,928,500	13.7	5,106,200	865,900	7,842,800
2010	2,409,100	1,175,300	16,062,700	13.7	5,169,000	879,900	7,879,300
2011	2,452,200	1,191,800	16,315,500	13.7	5,338,700	896,700	7,847,900
2012	2,485,700	1,207,800	16,419,100	13.6	5,425,300	897,600	7,828,400
2013	2,504,000	1,219,000	16,543,600	13.6	5,604,500	909,500	8,046,300
Average	**2,339,600**	**1,155,600**	**16,083,500**	**13.9**	**5,134,700**	**857,900**	**7,830,300**

Note: Column 4 is derived by dividing Column 3 by Column 2.

Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM) and National Accounts Longitudinal Microdata File (NALMF).

Table 1-2
Number of enterprises and employment in the linked CEEDD-BOM and NALMF business sector, 2005 to 2013

	CEEDD-BOM linked to the NALMF						
	Number of enterprises	Number of enterprises with employment	Total employment	Average number of employees per enterprise with employment	Share of NALMF enterprises	Share of NALMF enterprises with employment	Share of NALMF employment
	Column 8	Column 9	Column 10	Column 11	Column 12	Column 13	Column 14
		number				percent	
2005	1,473,500	776,200	7,486,300	9.6	70.0	72.5	48.6
2006	1,541,200	804,700	7,760,000	9.6	70.9	73.4	49.2
2007	1,609,100	833,500	7,848,000	9.4	71.5	73.8	48.8
2008	1,669,200	857,000	7,933,700	9.3	71.9	74.5	48.9
2009	1,704,400	865,900	7,842,800	9.1	72.3	74.7	49.2
2010	1,745,100	879,900	7,879,300	9.0	72.4	74.9	49.1
2011	1,777,100	896,700	7,847,900	8.8	72.5	75.2	48.1
2012	1,759,800	897,600	7,828,400	8.7	70.8	74.3	47.7
2013	1,847,700	909,500	8,046,300	8.8	73.8	74.6	48.6
Average	**1,680,800**	**857,900**	**7,830,300**	**9.1**	**71.8**	**74.2**	**48.7**

Note: Column 11 is derived by dividing Column 10 by Column 9; Column 12, by dividing Column 8 by Column 1 (Table 1-1); Column 13, by dividing Column 9 by Column 2 (Table 1-1); and Column 14, by dividing Column 10 by Column 3 (Table 1-1).

Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Ownwer Module (CEEDD-BOM) and National Accounts Longitudinal Microdata File (NALMF).

3 Methodology

This section details the steps taken to define business ownership by gender. A business can be men-owned, women-owned or equally owned. A business is men-owned when the share owned by one or more men owners is greater than or equal to 51%. Similarly, a business is women-owned when the share of women owners is 51% or more. When men and women owners each own 50%, the enterprise is defined as equally owned. To build ownership structure by gender in the CEEDD, three general steps are taken sequentially: derive ownership share, aggregate business ownership to the enterprise level, and identify gender dominance.

3.1 The measurement of ownership share in the Canadian Employer–Employee Dynamics Database

The CEEDD is maintained at the BI level for unincorporated businesses and at the BN level for corporations. For an unincorporated business, a BI is created by Statistics Canada to identify businesses with any sort of self-employment income.[14] For an incorporated business, a BN is a 15-digit number assigned by the CRA. A business requires a BN in order to hire employees, engage in import or export activities, and remit GST/HST. Not all businesses have a BN.

For private corporations, the ownership share is derived from the shares reported in Schedule 50 of their Corporation Income Tax Return (T2). Several factors need to be considered to ensure ownership share is clearly defined at the BN level.

First, the measurement of ownership share differs between businesses with a single share type (either common or preferred shares) and two share types (both common and preferred shares). In Schedule 50, only the percentages of common shares and preferred shares are reported. Most businesses only have one share type, so the ownership shares can be taken directly from Schedule 50. In the case of businesses with two share types, the average of the two ownership shares is used to create a single measure of ownership share for each shareholder.[15]

Second, ownership share is reported on a fiscal-year basis and needs to be converted to a calendar-year basis to be consistent with other tax-based files.[16] As part of a T2, a Schedule 50 is reported every fiscal year. To convert ownership share to a calendar-year basis, each reported ownership share is first prorated according to the number of days in the calendar year covered by each reported fiscal period. These weighted shares are then aggregated to the corresponding calendar year from multiple fiscal-year records.[17]

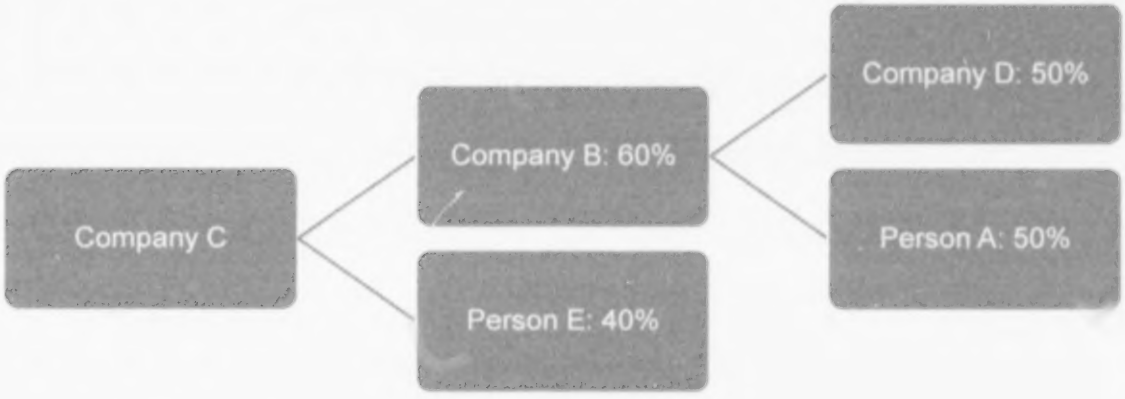
Third, both direct and indirect ownership need to be considered. Schedule 50 provides information on direct ownership only. It is possible that a person has an ownership stake in a company through another company. For example, Person A owns Company B, which in turn owns Company C. This makes Person A an indirect owner of Company C. To take indirect ownership into account, direct ownership is traced backwards, and the total ownership share is calculated as by multiplying the direct ownership shares. Figure 1 shows a hypothetical example of direct and indirect ownership.

---

14. Note, a business identifier is unique only cross-sectionally and within a single vintage. It often changes from year to year and may also change within a single year across different vintages.
15. That is, the sum of the common and preferred shares divided by 200%. Wolfson et al. (2016) adopted a similar strategy. The fact that Schedule 50 only reports the percentage of common and preferred shares held by shareholders separately is not the only limitation of the data source. Schedule 50 also does not provide information on voting rights. This is important because only shares with voting rights are linked to the ability to control a business.
16. Individual tax files (T1), unincorporated business tax files (T1BD) and statements of remuneration paid (T4) are all reported on a calendar-year basis.
17. For example, suppose the fiscal year for a particular corporation begins on April 1 and ends on March 31 the following year. For the year 2010, the business would have two applicable records, a record for April 2009 to March 2010 and a record for April 2010 to March 2011. The ownership share in year 2010 would be the weighted average of the shares in the two records, where the weights are the number of days in 2010 covered by each record.

Person A owns 50% of Company B. At the same time, Company B owns 60% of Company C. As a result, Person A directly owns 50% of Company B and indirectly owns 30% (50% multiplied by 60%) of Company C. In comparison, Person E is a direct owner of Company C with a 40% share.

Figure 1
Direct and indirect ownership (hypothetical example)



Source: Statistics Canada, authors' rendition.

For unincorporated businesses, the information to calculate ownership share is found in the T1FD, T1BD and Form T5013, Statement of Partnership Income. The information for larger, more complex partnerships (e.g., partnerships with more than five partnerships, partnerships over a certain revenue or asset size, and partnerships that have a corporation or another partnership as a partner) come from Form T5013. Smaller partnerships and sole proprietorships are covered in the T1FD and T1BD. Where information on partnership shares exists, it is used as the ownership share. When that information does not exist, the ownership share is imputed and set equal to each owner's share of net income within the business. If net income is missing, the ownership share is assumed to be equal among all owners.

3.2 The aggregation of ownership shares to the enterprise level

As noted, ownership share in the CEEDD is derived at the BI level for unincorporated businesses and at the BN level for corporations. Neither of these identifiers correspond to a statistical unit, or unit of measurement, used at Statistics Canada. They can, however, be aggregated to the enterprise level. An enterprise is a unit which directs and controls the allocation of resources and which produces a complete set of financial statements.

For incorporated businesses, the enterprise structure is well defined with a clear concordance between BNs and enterprises. For simple enterprises with a single BN, the ownership information at the enterprise level is the same as that at the BN level. For complex enterprises with multiple BNs, the ownership shares at the enterprise level are weighted average of those at the BN level. The weights are derived using the total assets of all businesses within the same enterprise. In the case of missing total assets, all the businesses within the same enterprise are assigned equal weights.[18]

18. In the case of missing total assets, employment and revenue can also be used. However, the latter two are also missing most of the time when the former is missing.

In contrast, the enterprise structure for unincorporated businesses that are partnerships is difficult to establish for two reasons. First, unlike private corporations, many partnerships do not have BNs or enterprise identifiers. This is the primary reason Statistics Canada creates BIs. Second, multiple identifiers may exist for certain records, such as the BI, BN, parent operating entity number and partnership account number. This makes establishing the business hierarchy complex.[19]

The following strategy is adopted to sort through different scenarios and to group BIs into entities that approximate an enterprise. Note that the concept of unincorporated enterprises used in this paper is experimental in nature.

Scenario 1: When a partnership account number exists (i.e., for larger, more complex partnerships that have filed a Form T5013), the partnership is considered an enterprise.

Scenario 2: If the business has no partnership account number but a parent operating entity number exists, the parent operating entity is considered an enterprise.

Scenario 3: If neither a partnership nor a parent operating entity exists but a BN exists, the BN is considered an enterprise.

Scenario 4: If neither a partnership, parent operating entity nor a BN identifier is available, then the BI is considered an enterprise. This scenario also includes a particular case where sometimes a BN may exist. However, the BI is used as the "enterprise" identifier if the BN can be linked to the corporations in the NALMF. The reason is that the concepts of unincorporated business and corporation are mutually exclusive. If an unincorporated business shares its BN with a corporation, then the corporation is presumably entitled to the BN.

Table 2 presents the number of enterprises and their corresponding 2013 share in each of these scenarios. Enterprises defined by a parent operating entity accounts form the largest share—over three-quarters of all unincorporated businesses in 2013—followed by enterprises defined by a BI with 19.4%. The relative size of each scenario remains unchanged even though their shares fluctuate from year to year.

Table 2
Unincorporated 'enterprise' by scenario in the CEEDD, 2013

	Enterprises	Share
	number	percent
Scenario 1: Partnership as enterprise	48,600	1.2
Scenario 2: Parent operating entity as enterprise	3,109,500	79.3
Scenario 3: Business number as enterprise	2,300	0.1
Scenario 4: Business identifier as enterprise	760,300	19.4
Total	**3,920,700**	**100.0**

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database (CEEDD).

Once the unincorporated enterprise structure is established, the ownership information is aggregated to the enterprise level from the BI level. Revenue is used to set weights because asset information is not reported by unincorporated businesses.

19. A partnership account number is a unique identifier for a partnership. This number is validated or selected from Form T5013 (Statement of Partnership Income). A Parent Operating Entity Number is a unique identifier created by the Business Register of Statistics Canada to identify a statistical structure where economic activities took place.

3.3 The identification of ownership by gender

After the ownership share is aggregated to the enterprise level, the dominant gender is determined by the gender with the highest share. That is, when the total share owned by men is greater than or equal to 51%, the enterprise is defined as men-owned, and when the total share owned by women is greater than or equal to 51%, the enterprise is defined as women-owned. When men and women each own 50%, the enterprise is equally owned.

Assigning majority ownership or equal ownership is straightforward if ownership shares add up to 100% within an enterprise. However, this is not the case for every enterprise in the Business Owner Module. For example, only the shareholders with at least 10% of the shares of a private corporation are reported in Schedule 50. As well, shareholders' information is misfiled or missing from time to time.

Consider the five hypothetical examples in Table 3, wherein the ownership shares do not add up to 100%. Although less than 100% of shares are identified, the gender of ownership can be determined in scenarios 1 and 2 because either men or women own at least 51% of shares. In contrast, the gender of ownership cannot be determined in scenarios 3 and 4 since neither men nor women own at least 51% of shares. Similarly, the gender structure in scenario 5 cannot be determined even though the enterprise appears to be equally owned by men and women among the identified shares. It is unclear whether the remaining 30% of shares are be controlled by solely men or women owners or be equally split between them.

Table 3
Hypothetical scenarios for determining the gender of ownership

	Scenario				
	1	**2**	**3**	**4**	**5**
Men-owned shares (number)	55	10	50	40	35
Women-owned shares (number)	10	80	45	50	35
Total identified shares (number)	**65**	**90**	**95**	**90**	**70**
Gender of ownership	Male-owned	Female-owned	Unclassified	Unclassified	Unclassified

Source: Statistics Canada, authors' compilation.

To build a well-defined ownership structure by gender, the paper includes only businesses wherein either 100% of shares can be identified or gender dominance (a gender owing at least 51%) can be determined. This is referred to as the benchmark sample.

To assess the sample's coverage, Table 4 compares the benchmark sample to the NALMF. On average over the examined period, 1.5 million businesses in the benchmark sample can be found in the NALMF. Enterprises with employment total an average of 798,000, accounting for 5.7 million employees. Compared with the NALMF (Table 1-1), the benchmark sample represents about 65.8% of all NALMF enterprises, 69.1% of enterprise with employment and 35.2% of employment in the NALMF. A comparison with Columns 12 to 14 in Table 1-2 suggests that the benchmark sample excludes businesses that tend to be larger; the ownership structure is likely to be more complex in larger firms than in smaller ones.

Table 4

Number of enterprises and employment in the CEEDD-BOM benchmark sample and the NALMF business sector, 2005 to 2013

	CEEDD-BOM benchmark sample linked to the NALMF business sector						
	Number of enterprises	Number of enterprises with employment	Total employment	Average number of employees per enterprise with employment	As share of the NALMF business sector		
					Number of enterprises	Number of enterprises with employment	Total employment
	number				percent		
2005	1,351,000	723,000	5,374,500	7.4	64.2	67.6	34.9
2006	1,412,500	749,200	5,500,700	7.3	65.0	68.4	34.9
2007	1,474,800	776,400	5,631,500	7.3	65.6	68.7	35.0
2008	1,530,100	798,000	5,707,800	7.2	65.9	69.3	35.2
2009	1,564,400	806,900	5,615,200	7.0	66.4	69.6	35.3
2010	1,601,100	819,500	5,724,900	7.0	66.5	69.7	35.6
2011	1,628,600	833,800	5,770,600	6.9	66.4	70.0	35.4
2012	1,613,000	834,700	5,771,100	6.9	64.9	69.1	35.1
2013	1,688,700	843,100	5,893,600	7.0	67.4	69.2	35.6
Average	**1,540,500**	**798,300**	**5,665,500**	**7.1**	**65.8**	**69.1**	**35.2**

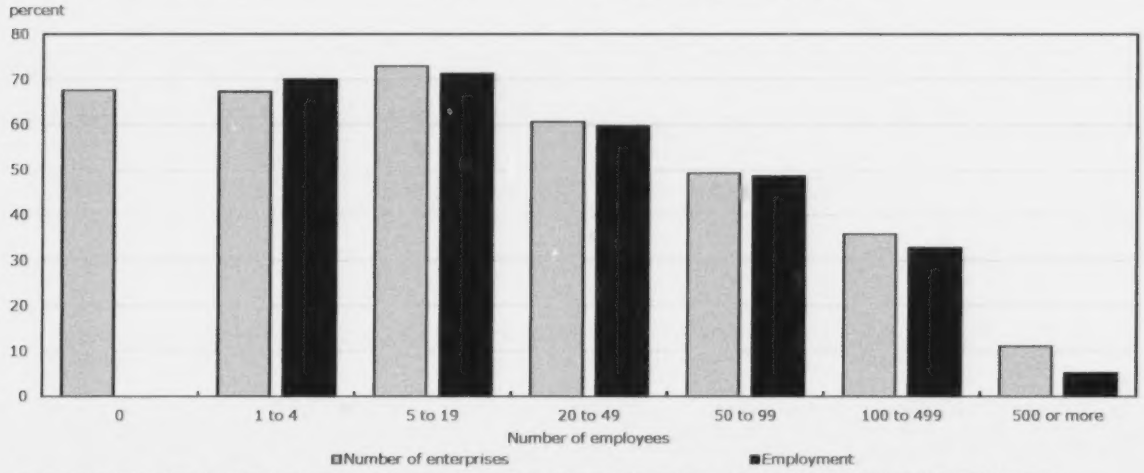
Note: All the numbers are rounded to the nearest 100.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM), and National Accounts Longitudinal Microdata File (NALMF).

Chart 1 compares the benchmark sample to the NALMF by employment size of enterprise for 2013. Table 4 showed that, in 2013, the number of enterprises in the benchmark sample was 67.4% of that in the NALMF, and that the employment associated with enterprises in the benchmark sample was 35.6% that of the NALMF. When these numbers are presented by employment size of enterprise in Chart 1, it is found that the benchmark sample tends to have a better coverage for smaller enterprises. The coverage is better for enterprises with less than 20 employees, accounting for around 71% of all enterprises and employment in the same size categories in the NALMF.[20] The shares decline as size of enterprise increases, down to about 50% for enterprises with 50 to 99 employees. The shares drop to around 30% for medium-sized enterprises (with 100 to 499 employees) and to only 11% (number of enterprises) and 5% (employment) for large enterprises (with 500 or more employees).

20. The number of enterprises and employment by enterprise size are presented in Table A.1 in the Appendix.

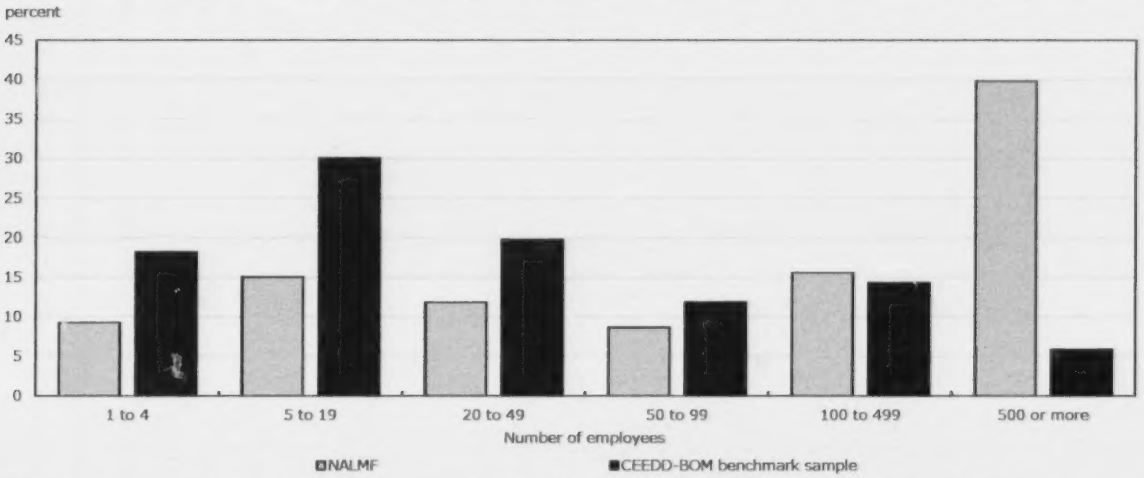
Chart 1
Shares of the CEEDD-BOM benchmark sample in the NALMF by size of enterprise, 2013



Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM) and National Accounts Longitudinal Microdata File (NALMF).

A similar pattern is found in Chart 2, which compares the distribution of employment by size of enterprise in the CEEDD-BOM benchmark sample with that in the NALMF. The distribution in the benchmark sample is right-tailed, with the mass of the distribution concentrated on small firms. In comparison, the distribution of employment in the NALMF is left-tailed, with the mass of the distribution concentrated on medium and large firms. This suggests that the benchmark sample over-represents small firms (with less than 100 employees) and underrepresents large firms (with 500 or more employees).

Chart 2
Distribution of employment by enterprise size, in the CEEDD-BOM benchmark sample and in the NALMF, 2013



Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM) and National Accounts Longitudinal Microdata File (NALMF).

4 Results and sensitivity analysis

This section presents key estimates of business ownership by gender for the enterprises included in the benchmark scenario where the ownership share can be 100% identified or the gender dominance can be observed and linked to the NALMF business sector.[21] Sensitivity analysis with an alternative measure of majority ownership—51% versus 50%—and comparison of results with the SFGSME are also presented.

4.1 Estimates of business ownership by gender

Over the period from 2005 to 2013, more than 1 million men-owned enterprises employed 4.1 million workers on an annual basis (Table 5). In contrast, the number of women-owned enterprises (275,300) and associated employment (828,700) were much smaller. The number of women-owned enterprises remained a fraction of that of men-owned enterprises on average (27%), as did the employment of women-owned enterprises (20%). The numbers for equally owned enterprises were the smallest among the three types of ownership.

Estimates of business ownership by gender across provinces or territories, industries and enterprise employment size are presented in Tables A.2 to A.4.

Table 5

Number of enterprises and employment by ownership gender in the CEEDD-BOM benchmark sample, 2005 to 2013

	Men-owned private enterprises		Women-owned private enterprises		Equally-owned private enterprises	
	Number of enterprises	Total employment	Number of enterprises	Total employment	Number of enterprises	Total employment
	number					
2005	906,400	3,960,700	232,800	754,400	197,300	657,300
2006	945,600	4,035,100	244,200	782,200	207,300	680,700
2007	987,100	4,120,700	257,800	809,500	218,300	699,400
2008	1,018,700	4,171,100	270,600	818,900	227,900	717,000
2009	1,034,500	4,082,500	280,900	819,300	233,000	712,700
2010	1,055,200	4,156,900	290,000	845,300	238,800	721,600
2011	1,066,400	4,183,200	296,800	863,800	247,400	722,800
2012	1,055,800	4,177,400	295,800	866,500	249,700	726,600
2013	1,104,700	4,256,500	308,700	897,900	260,500	738,800
Average	**1,019,400**	**4,127,100**	**275,300**	**828,700**	**231,100**	**708,600**

Note: All numbers are rounded to the nearest 100.

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM).

Thus far, business ownership by gender is defined according to the shares **collectively** owned by gender. Interestingly, most private enterprises where ownership shares can be identified are owned by a single dominant owner. Over the period from 2005 to 2013, an average of about 89% of men-owned enterprises were owned by a single dominant man owner. The share of women-owned enterprises that were owned by a single dominant women owner was even higher, about 92%.

4.2 Sensitivity analysis

Definition of majority. An enterprise is defined in the benchmark sample as men-owned if men owners own at least 51% of shares and as women-owned if women owners own at least 51% of shares. Alternatively, the threshold of majority could be defined as 50%. As shown in Table 6, the

21. See the companion Economic Insights paper *Women-owned enterprises in Canada,* for related estimates (Grekou, Li and Liu, 2018). Note that enterprises operating outside of Canada or in the public administration industry (NAICS 91) are excluded.

gender composition of business ownership is almost identical under the two definitions, with a negligibly small shift to men-owned from equally owned enterprises.

Table 6
Gender composition of business ownership under different definitions of majority, 51% versus 50%

	Men-owned enterprise		Women-owned enterprise		Equally-owned enterprise	
	>=51%	>50%	>=51%	>50%	>=51%	>50%
			percent			
2005	67.8	67.9	17.4	17.4	14.8	14.7
2006	67.7	67.7	17.5	17.5	14.9	14.8
2007	67.4	67.5	17.6	17.6	14.9	14.9
2008	67.1	67.1	17.8	17.8	15.0	15.0
2009	66.8	66.8	18.1	18.1	15.1	15.0
2010	66.6	66.6	18.3	18.3	15.1	15.1
2011	66.2	66.2	18.4	18.4	15.4	15.4
2012	65.9	65.9	18.5	18.5	15.6	15.6
2013	66.0	66.0	18.5	18.5	15.6	15.5

Source: Statistics Canada, benchmark sample of the Canadian Employer–Employee Dynamics Database Business Owner Module.

Comparison with the SFGSME. To ensure estimates of ownership from the CEEDD-BOM are comparable to those from the SFGSME, businesses in the benchmark sample are restricted to those with less than 500 employees and to industries covered by the SFGSME.[22] The estimates from the two data sources are close. The shares of men-owned enterprises in the CEEDD and the SFGSME were very similar in 2011, 66.7% vs. 66.3%, and the former is also within the 95% confidence interval of the latter estimate (Table 7). The share of women-owned enterprises was slightly higher in the CEEDD (17.6%) than that in the SFGSME (15.6%) and the share of equally owned enterprises was lower in the CEEDD than in the SFGSME, both estimates from the CEEDD also outside the 95% confidence intervals of the estimates from the SFGSME. The estimates of women-owned enterprises are also similar for 2007 between the two sources and larger in the 2013 CEEDD than 2014 SFGSME, the latest years in the two data sources.

Table 7
Business ownership by gender, CEEDD-BOM and SFGSME

	2007		2011		2013	2014
	CEEDD-BOM	SFGSME	CEEDD-BOM	SFGSME	CEEDD-BOM	SFGSME
			percent			
Men-owned	**67.7**	**64.3**	**66.7**	**66.3**	**66.6**	**64.6**
95% confidence interval						
Lower bound	...	61.0	...	64.7	...	63.5
Upper bound	...	67.5	...	68.0	...	65.8
Women-owned	**16.8**	**16.4**	**17.6**	**15.6**	**17.6**	**15.7**
95% confidence interval						
Lower bound	...	13.8	...	14.2	...	14.7
Upper bound	...	19.0	...	16.9	...	16.6
Equally-owned	**15.5**	**19.3**	**15.8**	**18.1**	**15.8**	**19.7**
95% confidence interval						
Lower bound	...	16.7	...	16.8	...	18.8
Upper bound	...	22.0	...	19.4	...	20.7

... not applicable

Sources: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM) and Survey on Financing and Growth of Small and Medium Enterprises (SFGSME).

22. The industries in the following NAICS classifications are excluded from the CEEDD-BOM for comparison purposes: 22, 52, 55, 61, 91, 5321, 5324, 6214, 6215, 6219, 6221, 6222, 6223 and 6242.

5 Conclusion

The lack of comprehensive data on women's business ownership presents challenges for designing policies to promote gender diversity and equality in business ownership. The work plan behind the study fills the gap by identifying business ownership by gender using new administrative data—the Canadian Employer–Employee Dynamics Database (CEEDD). The CEEDD contains information on all business owners and their owned businesses. This paper discusses the methodology adopted to establish the gender structure of business ownership and presents estimates of business ownership by gender. These estimates are robust to alternative definitions of majority ownership and are comparable to those published using the Survey on Financing and Growth of Small and Medium Enterprises.

The CEEDD's significantly expanded business coverage, longitudinal nature, and multifaceted information on both owners and their businesses creates potential in the study of business ownership. The CEEDD can be used to study the relative performance of women-owned enterprises, compared with men-owned enterprises, in job creation, growth, survival, productivity, research and development, trade, investment, and their underlying forces. It can also be expanded to study other types of business ownership such as ownership by youth, seniors, immigrants and indigenous people.

6 Appendix

Table A.1
Number of enterprises and total employment in the CEEDD-BOM benchmark sample and the NALMF, 2013

Enterprise size	NALMF		CEEDD-BOM benchmark sample	
	Number of enterprises	Total employment	Number of enterprises	Total employment
	number			
No employees	1,286,100	0	868,800	0
Fewer than 5 employees	859,600	1,532,300	578,100	1,073,400
5 to 19 employees	257,700	2,483,100	187,900	1,771,500
20 to 49 employees	63,500	1,948,000	38,500	1,163,600
50 to 99 employees	20,800	1,431,700	10,200	696,400
100 to 499 employees	13,500	2,572,200	4,900	841,700
500 employees or more	2,800	6,576,300	300	347,100

Source: Statistics Canada, Canadian Employer–Employee Dynamics Database Business Owner Module (CEEDD-BOM) and National Accounts Longitudinal Microdata File (NAMLF).

Table A.2
Business ownership by gender and geographic area, annual average, 2005 to 2013

Geographic area	Men-owned private enterprises		Women-owned private enterprises		Equally-owned private enterprises	
	Number of enterprises	Total employment	Number of enterprises	Total employment	Number of enterprises	Total employment
	number					
Newfoundland and Labrador	8,400	44,000	2,500	12,500	1,400	7,800
Nova Scotia	22,400	105,700	5,300	18,900	3,600	12,400
Prince Edward Island	4,200	21,900	1,000	3,200	700	2,700
New Brunswick	19,400	96,900	4,400	18,200	3,100	12,500
Quebec	246,300	1,143,500	56,700	199,400	22,900	88,300
Ontario	369,700	1,423,100	109,100	303,700	81,600	264,600
Manitoba	26,600	128,100	6,900	25,300	8,300	28,900
Saskatchewan	32,200	104,600	7,000	22,000	10,000	26,300
Alberta	147,800	495,500	38,200	94,200	52,400	121,000
British Columbia	140,300	553,500	43,600	128,800	46,800	141,900
Territories	1,900	10,200	600	2,400	500	2,100
Canada	**1,019,400**	**4,127,100**	**275,300**	**828,700**	**231,100**	**708,600**

Note: All the numbers are rounded to the nearest 100; they may not add up to the total.
Source: Statistics Canada, benchmark sample of the Canadian Employer–Employee Dynamics Database Business Owner Module.

Table A.3
Business ownership by gender and industry, annual average, 2005 to 2013

	Men-owned private enterprises		Women-owned private enterprises		Equally-owned private enterprises	
	Number of enterprises	Total employment	Number of enterprises	Total employment	Number of enterprises	Total employment
	number					
Agriculture, forestry, fishing and hunting	54,900	163,100	6,800	18,800	12,900	34,100
Mining, quarrying, and oil and gas extraction and utilities	8,600	33,800	1,000	2,900	2,800	6,000
Construction	128,600	595,700	11,900	37,600	22,500	76,800
Manufacturing	36,200	474,300	6,500	51,900	7,000	44,800
Wholesale trade	41,100	268,500	8,200	34,100	8,500	32,200
Retail trade	65,500	634,900	25,800	142,100	19,600	119,600
Transportation and warehousing	50,500	195,500	5,400	20,500	8,100	25,300
Information and cultural industries	12,000	40,500	3,700	5,700	2,000	4,200
FIRE and management of companies and enterprises	165,200	188,500	49,400	36,500	38,100	28,000
Professional, scientific and technical services	123,700	283,900	37,500	58,800	32,600	46,300
Administrative and support, waste management and remediation services	40,300	284,800	14,300	85,500	8,700	46,600
Educational services	5,100	19,800	3,700	16,100	1,800	6,900
Health care and social assistance	40,100	160,300	22,800	87,300	6,400	31,900
Arts, entertainment and recreation	9,200	48,400	3,900	13,400	2,200	9,200
Accommodation and food services	32,800	457,700	13,800	130,700	11,700	133,000
Other services (except public administration)	42,200	162,700	15,600	53,900	9,800	35,600
All industries	**1,019,400**	**4,127,100**	**275,300**	**828,700**	**231,100**	**708,600**

Notes: FIRE: finance, insurance, real estate and rental and leasing. A fraction of enterprises are missing North American Industry Classification System codes, accounting for about 19% of all private enterprises included in the benchmark scenario. However, they only account for only 3% to 4% of total employment. All the numbers are rounded to the nearest 100; they may not add up to the total.
Source: Statistics Canada, benchmark sample of the Canadian Employer–Employee Dynamics Database Business Owner Module.

Table A.4

Business ownership by gender and size of enterprise, annual average, 2005 to 2013

	Men-owned private enterprises		Women-owned private enterprises		Equally-owned private enterprises	
	Number of enterprises	Total employment	Number of enterprises	Total employment	Number of enterprises	Total employment
	number					
No employees	503,300	0	141,300	0	111,200	0
Fewer than 5 employees	352,900	664,000	94,700	172,700	85,200	170,300
5 to 19 employees	124,100	1,176,700	32,200	296,500	28,800	269,000
20 to 49 employees	27,200	825,600	5,300	159,100	4,600	135,900
50 to 99 employees	7,800	528,900	1,300	85,600	1,000	64,600
100 employees or more	4,100	931,900	500	114,900	400	68,700
All sizes	**1,019,400**	**4,127,100**	**275,300**	**828,700**	**231,100**	**708,600**

Note: Size of enterprise is measured by employment. All numbers are rounded to the nearest 100; they may not add up to the total.

Source: Statistics Canada, benchmark sample of the Canadian Employer–Employee Dynamics Database Business Owner Module.

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